

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Yeshwanth Narendar et al.

Title: METHOD FOR TREATING SEMICONDUCTOR PROCESSING
COMPONENTS AND COMPONENTS FORMED THEREBY

App. No.: 10/824,329 Filed: April 14, 2004

Examiner: Julio J. Maldonado Group Art Unit: 2823

Customer No.: 34456 Confirmation No.: 5396

Atty. Dkt. No.: 1035-E4371

MS AMENDMENT
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

REQUEST FOR RECONSIDERATION

Dear Sir:

In response to the Office Action mailed December 28, 2007, reconsideration and withdrawal of the rejections contained therein are respectfully requested for the following reasons.

Claims 1, 4-9, 14-19 and 21 were rejected over Thilderkvist et al. in view of Kumar et al. Dependant claims 10 and 11 are rejected in further view of Bosch. Claim 20 was rejected in further view of Goldstein et al. These rejections are respectfully traversed for the following reasons.

The text of applicants' response filed October 22, 2007, is incorporated herein. Summarizing briefly, applicants explained that the claimed semiconductor processing component having an outer surface portion having a surface impurity level not greater than two times the bulk impurity level, has been achieved through subtractive processing as described in the present specification. Subtractive processing relies upon repeated oxidation and etching steps to remove an outer target portion of the SiC outer surface portion.

In contrast, the prior art relies upon diffusion processing, in which a gettering or sacrificial layer is deposited on a component, and diffusion is effected through high temperature treatment to drive impurities into the deposited gettering layer, and the gettering layer is thereafter removed. At no point does the prior art describe removing a portion of the semiconductor processing component, but rather relies upon diffusion and removal of a gettering (sacrificial) layer.

The prior declaration submitted by Dr. Narendar summarizes the effectives of such a prior art approach to improving surface purity. In response, the PTO has taken several positions in section 5 of the current office action, namely that the prior art teaches that the cleaning process can be carried out several times until a desired SiC surface is obtained (page 9, lines 18-20), and further that a claimed invention “would flow naturally from the manipulation of well-known parameters (e.g., temperature, time, etc.) to one of ordinary skill in the art.” Page 10, Lines 1-3. In response, applicants again submit that the PTO has failed to meet its burden of establishing a prima facie case of obviousness, and has completely failed to establish a proper foundation on which to base its rejection that the claimed invention “would flow naturally” from the manipulation of well-known parameters. In this latter respect, the PTO’s attention is drawn to the Rule 132 Declaration enclosed herewith, which has been updated by Dr. Narendar to more clearly address the cited prior art.

It is believed that the Rule 132 Declaration is self explanatory, the text of which is not repeated herein. Briefly summarizing, the Declaration explains that the repetitive gettering process, which relies upon deposition of a sacrificial layer followed by high temperature diffusion of impurities and contaminants into the sacrificial layer, cannot result in the claimed purity level. The testing carried out by Dr. Narendar represents 360 cycles according to the prior art, by conducting high temperature treatment for 12 hours (the prior art teaches 120 minute diffusion periods, 12 hours representing 360 cycles), well beyond the 2-10 cycles taught by the prior art. In addition, the temperature at which diffusion is carried out was raised above the nominal 1100 degrees C nominal temperature taught by the prior art, to 1200 degrees C. Even after such extended heat treatment at even elevated temperatures, the resulting purity level remains 20X the bulk impurity level, a full order magnitude above that which is claimed.

While it is appreciated that the prior art teaches purification to a desired level through continued processing, the prior art fails to even remotely enable the claimed purity levels. The PTO is requested to either withdraw the art rejections, or establish a proper prime facie case of obviousness by supporting its conclusory position that the claimed invention “would naturally flow” from the disclosure of the prior art.

Furthermore, Thilderkvist teaches minimization of downtime of the processing equipment, by executing rapid cleaning. C, 2, lines 57-60. Thilderkvist teaches that the described process takes only 30 minutes. C, 4, lines 38-45. Accordingly, not only does extended processing fail to replicate the claimed invention, but one of ordinary skill in the art would not have carried out such extended processing, as being contrary to the teachings of Thilderkvist.

Applicants respectfully submit that the presently claimed invention would not have been obvious over the art of record. Withdrawal of the section 103 rejections is respectfully requested.

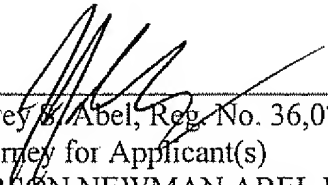
Applicants respectfully submit that the present application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims.

Should the Examiner deem that any further action by the Applicants would be desirable for placing this application in even better condition for issue, the Examiner is requested to telephone the Applicants' undersigned representative at the number below.

The Commissioner is hereby authorized to charge any fees that may be required, or credit any overpayment, to Deposit Account Number 50-3797.

Respectfully submitted,

Date 6/30/08



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